



# UNITED STATES PATENT AND TRADEMARK OFFICE

*[Signature]*  
UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/708,422

03/02/2004

David A. Trueba

10437.0074.NPUS01

2421

23369

7590

05/02/2006

EXAMINER

OH, TAYLOR V

HOWREY LLP

C/O IP DOCKETING DEPARTMENT

2941 FAIRVIEW PARK DRIVE, SUITE 200

FALLS CHURCH, VA 22042-7195

ART UNIT

PAPER NUMBER

1625

DATE MAILED: 05/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/708,422		TRUEBA ET AL.	
	<b>Examiner</b>		<b>Art Unit</b>	
	Taylor Victor Oh		1625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 February 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 7-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)     | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

Art Unit: 1625

Applicant's arguments with respect to claims 1-6 have been considered but are moot in view of the new ground(s) of rejection.

The Status of Claims :

Claims 1-18 are pending.

Claims 1-6 have been rejected.

Claims 7-18 has been withdrawn from consideration.

**DETAILED ACTION**

**Priority**

I. None.

**Drawings**

II. The drawing filed on 3/02/04 is accepted by the examiner.

***Specification***

The disclosure is objected to because of the following informalities:

In the specification, the phrases " Electronic Version " " Stylesheet Version v1.1.1 " are recited. These expression should be deleted and the application number should be inserted instead ; furthermore , the title of the invention is written in a large character in comparison with the rest of the specification. The examiner recommends it to reduce the size of the letters.

Moreover, there is no page numbering system in the specification. This is improper. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

Art Unit: 1625

2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miura et al (US 5,625,095).

Miura et al discloses a process of separating acetaldehyde from the liquid containing acetaldehyde and methyl iodide by distillation; further, selectively extracting acetaldehyde with water (see col. 7, lines 15-18). The various compositions are analyzed at the time of charging the starting liquid, distillation condition, and top withdrawn liquid composition (see col. 12, lines 20-43):

Composition of charged liquid:

Methyl iodide	89.4 weight %
Methyl acetate	5.0 weight %
Acetic acid	5.0 weight %
Water	0.5 weight %
Acetaldehyde	0.07 weight %
Paraldehyde	0 weight %
Alkanes	0.01 weight %
Others	0.02 weight %

Distillation condition:

Reflux ratio	170
Charged amount	100 parts (285 kg/hr)
Withdrawn amount	0.19 part from top, 99.81 parts from bottom
Charging plate	70th plate from top
Top temperature	54° C.
Bottom temperature	82° C.

Art Unit: 1625

Top withdrawn liquid composition:

Methyl iodide	68.3 weight %
Methyl acetate	0 weight %
Acetic acid	0 weight %
Water	0.7 weight %
Acetaldehyde	29.0 weight %
Paraldehyde	0.1 weight %
Alkanes	1 weight %
Others	0.9 weight %

Furthermore, removal of the top withdrawn liquid from the system makes it possible to control the acetaldehyde concentration in the reactor (see col. 12 ,lines 45-47).

In addition, the composition of extraction materials (top withdrawn liquid, extracts, raffinate ,distillate, and the bottom products are shown below (see col. 13 ,line 34) :

**TABLE I**

	Composition (weight %)				
	Extraction material	Extract	Raffinate	Distillate	Bottom liquid
Methyl iodide	68.3	1.0	97.0	4.2	0
Formic acid	0	0	0	0	0.2
Water	0.7	76.8	0.2	2.4	99.8
Acetaldehyde	29.0	21.8	0.8	91.4	0
Paraldehyde	0.1	0	0.1	0	0
Alkanes	1.0	0	1.5	0	0
Others	0.9	0.5	0.4	2.0	0

However, the instant invention differs from the prior art in that measuring the density of the overhead obtained from the distillation of a mixture is unspecified; the adjustments of heating rate and the water feed rate to the extraction are not shown in the prior art.

Concerning unspecified measurement of the density of the overhead , the prior art teaches indirectly the concentration of various compositions in the overhead 20

Art Unit: 1625

**withdrawn from the methyl iodide—acetic acid splitter column 14 contains methyl iodide of 5 to 90 weight %, acetaldehyde of 0.05 to 50 weight %, methyl acetate of 0 to 15 weight %, acetic acid of 0 to 80 weight %, moisture of 0.1 to 40 weight %, and other carbonyl impurities.** (see col. 9 ,lines,

1-6). In addition, it is well-known fact in the art that the density (m/v) is directly related to the concentration (m/ V). Therefore, it would have been obvious to the skilled artisan in the art to be motivated to monitor the density of the various components of the overhead in order to maximize the efficiency of the process since the density (m/v) is directly proportional to the concentration (m/ V).

Regarding the adjustment of heating rate, the reference does teach the condition of the overhead at a temperature of 55<sup>0</sup> C or higher (see col. 8 ,lines 22-26) at which the separation of acetaldehyde and methyl iodide can be conducted by distilling the mixed liquid containing acetaldehyde and methyl iodide; also, controlling the operation pressure and the operation temperature in a distillation column has made it possible to separate and remove acetaldehyde (see col. 9 ,lines 46-50). From these teachings, it is quite possible to the skilled artisan in the art to be motivated to adjust the heating rate in order to make the separation process of acetaldehyde and methyl iodide more efficient.

With respect to the adjustment of the water feed rate to the extraction, the prior art does mention that the extraction is carried out at a temperature of 0 to 100<sup>0</sup> C for 1 second to 1 hour (see col . 7 , lines 57-58); it also recommends to use every suitable apparatus known in terms of technique and cost (see col. 7 ,lines 60-63). Furthermore,



Art Unit: 1625

Table 1 shows the % of the water composition in the extraction material (see col. 13 ,line 34). Therefore, it would be obvious to the skilled artisan in the art to figure out how to adjust the water feed rate to the extraction.

Miura et al expressly discloses the process of separating acetaldehyde from the liquid containing acetaldehyde and methyl iodide by distillation; further, selectively extracting acetaldehyde with water (see col. 7 ,lines 15-18). Furthermore, it does offer guidance that controlling the operation temperature in a distillation column along with the suitable extractor has made it possible to separate and remove acetaldehyde efficiently (see col. 9 ,lines 46-50). Therefore, it would have been obvious to the skilled artisan in the art to be motivated to adjust heating rate and the water feed rate to the extraction in order to optimize the process of separating acetaldehyde from the liquid containing acetaldehyde and methyl iodide. This is because the skilled artisan in the art would expect such modifications to be efficient and cost-saving as shown in the prior art (see col. 7 ,lines 60-63) and (see col. 9 ,lines 46-50).


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Taylor Victor Oh whose telephone number is 571-272-0689. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cecilia Tsang can be reached on 571-272-0562. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Art Unit: 1625

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

\*\*\*  
  
4/30/06